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LT Erich U. Schaller, USN

Paper Advisor (if Any): **Professor Angus K. Ross**

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NAVAL WAR COLLEGE
Newport, R.I.

Naval Surface Force Protection in the Long War: A Consideration Of the Anti-Access Threat

by

Erich Udo Schaller

Lieutenant, United States Navy

A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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Abstract

Twenty-first century Operational Commanders are required to project and sustain the Joint Force in distant anti-access environments. Naval surface forces are the most viable method of access by virtue of their ability to place the Joint Force within range of mission requirements through free transit of international waters. Potential adversaries possess three widely proliferated and highly effective means of denying access to naval surface forces: sea mines, cruise missiles, and diesel electric submarines. Current doctrine is insufficient to counter these threats in the littoral. This paper examines anti-access strategies and the challenges of operating naval surface forces forward in the littoral. Threats are discussed in depth to include illustrative historical examples, weapon-specific assessment of operational threat, and scrutiny of current operational doctrine. Finally, the paper considers current debate concerning access denial and develops recommendations for how best to prepare the Joint Operational Commander and naval surface forces to confront and defeat the anti-access threat.

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INTRODUCTION

We must take the battle to the enemy, disrupt his plans and confront the worst threats before they emerge. In this world we have entered, the only path to safety is the path of action. And this nation will act.

President George W. Bush
June 1st, 2002

The world changed on September 11th, 2001. The tragic events of that day precipitated a dramatic shift in focus and expectations with regard to national security and policy. The above quote from the Commander-in-Chief encapsulates what is at the heart of the "long war" against rogue nations and transnational actors who utilize terrorism to further their purposes. It was not coincidental that President Bush used martial imagery; the United States military and Coalition allies will tread the "path of action". In the *National Strategy For Combating Terrorism*, the Bush Administration lays out an "aggressive, offensive strategy" against terrorism and state sponsors of terrorism, denying them sanctuary and support.[1] A clear emphasis throughout is placed on timely and swift action; protecting the United States and its interests in the long war will require "extending our defenses to ensure we identify and neutralize the threat as early as possible."[2]

The *National Defense Strategy* guides the Department of Defense towards achieving this mission and in particular considers a key challenge: that of ensuring ready access to areas around the world where national interest might be threatened. In order to deny sanctuary to enemies, extend

defenses forward, and act swiftly, forces must be able to gain access to key regions worldwide. The Secretary of Defense acknowledges that adversaries will devise innovative and effective means of compromising U.S. power projection, using their most potent and proven military capabilities enhanced with cutting-edge technology. Despite this, his direction is clear: "We will project and sustain our forces in distant anti-access environments".[3]

Achieving this capability is of crucial importance to the twenty-first century Operational Combatant Commander. In the *National Military Strategy* the Chairman of the Joint Chiefs of Staff advises Commanders that they must plan and be prepared to swiftly defeat adversaries:

> In each case, the Joint Force must combine speed, agility and superior war fighting ability to generate decisive effects. Moving forces into multiple geographic locations will require assured strategic access as well as strategic and tactical lift systems robust enough to conduct and sustain multiple, simultaneous operations. Swiftly defeating adversaries in overlapping operations will require the ability to quickly reconstitute, reconfigure and redeploy forces to conduct another campaign.[4]

There is one component of the Joint Force that is exceedingly capable of providing the Operational Commander with the ability to meet this requirement: naval surface forces. Warships are clearly proficient in projecting combat power and lift capability to forward areas with decisive effect. They are also the most efficient means for quick redeployment of forces in overlapping operations. And above all, naval surface forces distinguish themselves as the most viable method of access for the Joint

Commander by virtue of their ability to place the Joint Force within range of mission requirements through free transit of international waters.

It is hardly surprising then, that potential adversaries have focused their anti-access capabilities upon defeating naval surface forces and denying naval access to their littoral through international waters. The anti-access threats of most concern to the Operational Commander are mines, cruise missiles, and diesel-electric submarines. Each of these threats is highly lethal to ships and is ubiquitous among even the most impoverished littoral rogue nations and potentially adversarial states. None of these threats are new, naval surface forces have faced them for decades. Yet despite this, the current doctrines for countering and neutralizing these threats impose significant restraints upon the Operational Commander in the form of operational pauses and significantly elevated risk while sustaining U.S. and Coalition forces. This reality is incompatible with the articulated national vision expecting swift action and assured access.

In order to demonstrate this, the nature of anti-access strategies and the particular challenges of operating naval surface forces forward in the littoral will be analyzed. Each of the three threats will be examined in depth to include illustrative historical examples, weapon-specific assessment of operational threat, and scrutiny of current operational doctrine. Finally, this paper will consider counter-arguments to the thesis and discuss recommendations towards a realistic approach to this issue.

The Anti-Access Construct

The recent history of armed conflict has demonstrated to an observant global community the futility of conventional, "head-on" warfare against the United States. Once U.S. and Coalition joint forces have gained entry to a region, readied for combat, and emplaced lines of logistics and communications, any realistic hope of military success will have vanished. Thus the anti-access construct seeks to employ asymmetric strategy and weapons systems to counteract U.S. and Coalition military superiority.

In a given anti-access scenario, the potential adversary would seek maritime chokepoints or littoral areas where naval surface forces might congregate.[5] The areas would be covered by weapons systems ideal for defensive sea denial, such as mines, anti-ship cruise missiles, and diesel-electric submarines. Some weapons may be used against the first line of warships attempting entry in order to stymie their advance, while others can wait for larger and lesser defended assets such as transports or troopships to pass by. The underlying concept is that by contesting use of the littoral to U.S. and Coalition forces, the potential adversary will have in effect extended its defenses out to the regional entry points and struck at an important Western sensibility: cost aversion. While it is certain that given enough time and material, U.S. and Coalition forces could eventually breech any such defense, the anti-access strategy will have achieved its true goal in showing that the cost in lives and sunken ships is too much. The potential adversary is thereby afforded the chance of a negotiated settlement or

diplomatic agreement, and in this way would be able to realize its objectives in spite of even a considerable military inferiority.[6]

Challenges of the Littoral Environment

The littoral is fundamentally a joint environment. As opposed to the open ocean "blue water" where naval fleets dominate, or far inland where ground and air forces operate, in the littoral "brown water" region the Joint Operational Commander will employ Navy and Marine Corps assets and oversee the arrival of ground forces, including equipment necessary to sustain Army and Air Force operations. But operating within the littoral is a unique and demanding challenge, especially for the naval surface forces that enable brown water operations. As opposed to the ocean, littoral water space is physically smaller, marked by shoals and shallow water, which constrains the maneuverability and restricts the movement of vessels. Also, the incidence of vessel traffic, ranging from simple fishermen to supertankers, is much higher. Such a cluttered and dynamic environment demands an increase in situational awareness.[7]

Within this collapsed battlespace, the advent of ever-faster weapons such as cruise missiles and torpedoes greatly reduces reaction time for naval surface forces. Further, enemy forces can exploit "innocent" local traffic to conduct observation, targeting, and even deploy weapons such as mines. In all, the physical environment colludes with asymmetric weaponry to greatly increase the possibility of surprise attack at close range and

multiple axes. The Joint Operational Commander must remain aware of these factors and harbor a healthy respect for the littoral challenges in order to successfully direct operations in this crucial joint battlespace.

Mines

Twice in recent history sea mines have frustrated plans for major U.S. and coalition amphibious operations. In September 1950 a bold amphibious landing was made at Inchon in order to flank North Korean forces and stop their advance against the beleaguered Pusan perimeter. A second landing was planned for the following month at the eastern port city of Wonsan to place additional allied forces in the North Korean rear. Learning from their failure at Inchon, the North Koreans employed thousands of Soviet supplied sea mines to cover the east coast and approaches to the port of Wonsan.[8] This strategy proved to be extremely effective, despite allied preparations.

Photo # 80-G-423625 South Korean minesweeper hits a mine off Wonsan, October 1950

Figure 1 The fate of YMS-516

On 10 October 1950, ten days prior to the planned start of amphibious landings, the United States and South Korea began clearance operations, having anticipated the mine threat. Two days later, the

minesweepers USS PIRATE (AM 275) and USS PLEDGE (AM 277) both hit mines and were sunk, causing the tempo of the entire operation to slow considerably. Despite this, the landings were still on schedule when on 18 October the South Korean minesweeper YMS-516 detonated and was sunk by a magnetic mine while sweeping the invasion beaches.[9] This resulted in postponement of the landings until the Wonsan area of operations could be declared safe to operate, a process that continued well into November. Fortunately, the swift advance of allied land forces up the Korean peninsula had by that time negated the need for an amphibious assault at Wonsan. The import of events was clear, however. Sea mines had effectively delayed a major operation by denying unfettered access to the littoral.

It would seem that the lessons of Wonsan needed relearning some 40 years later. During the first Gulf War, naval and amphibious forces were directed by the Joint Operational Commander General Schwarzkopf to prepare for an assault into Kuwait. Whether a landing would actually occur or merely cause concern for the Iraqis, the need for littoral access was clear. The enemy responded by laying mines. Operating often under cover of darkness and from merchant vessels, Iraqi's laid some 1,200 mines in two layers to guard the sea approaches to Kuwait and southern Iraq. The mines comprised a variety of advanced magnetic and acoustic influence mines, as well as simple vintage contact mines.[10]

Aware of the mine threat, U.S. and Coalition forces devoted numerous assets to mine clearance operations, including the latest mine hunting

ships, helicopters, and Explosive Ordinance Disposal teams. As mine clearance commenced in February 1990, a process that was projected to last 16 to 20 days lengthened considerably due to a lack of intelligence regarding the actual depth and complexity of Iraqi minefields.[11] The resultant operational delay factored into the eventual decision not to stage a landing and uncertainty regarding mined areas forced naval surface forces away from shore, significantly eroding their ability to project power inland.[12]

It was in an attempt to project power ashore that naval forces encountered disaster. Ordered to clear a path into Faylaka and the Kuwaiti coast for battleships to contribute fire support for the land campaign, on 18 February USS TRIPOLI (LPH 10) struck a moored contact mine while operating as flagship to the mine clearance operation. The detonation tore a 16 by 20 foot hole in the forward starboard side underneath the waterline, causing flooding and structural damage. Hours later, the cruiser USS PRINCETON (CG 59), which was operating forward to defend the mine hunters from Iraqi cruise missile threats, set off two influence mines which left her dead in the water.[13] Fortunately, the vulnerable warships were not subject to follow-on attacks and the skill of Navy Damage Controlmen saved both ships. The mine clearance operation was eventually successfully concluded but a profound

Figure 2 Damage done to TRIPOLI by a single mine

lesson was re-taught. Sea mines had once again frustrated a major amphibious effort, took two warships out of action, and allowed an inferior military force to exercise temporary sea denial within the littoral.

These historical examples graphically illustrate the utility of sea mines to potential adversaries. Sea mines are relatively cheap, with costs starting in the tens of thousands of dollars, and are readily available on the international arms market. Further, they can be laid with even quite primitive means, as the Iraqi's ably demonstrated. This puts the sea mine within the resource capability of any rogue nation and terrorist organizations as well.[14]

Mines encompass many types: they can be triggered by contact, sound, or magnetic influence, and can be laid anywhere from the surf zone into deep water. Advanced types can fire rockets vertically into ships or launch torpedoes at submarines, and are resistant to modern sweeping methods. In all, mines can be very hard to counter and affect the battlespace by their mere presence. From the operational perspective, sea mines offer the ability to control a certain area over a significant length of time without any commitment of conventional naval forces. They are the ultimate affordable force multiplier.[15]

The Operational Commander must realize that sea mines are a joint problem, which threatens naval surface forces and thus the power projection of the Army and expeditionary Air Force.[16] Moreover, there are no quick and risk-free methods of countering mines. Even benefiting from

the latest technology, mine hunting is still painstaking and time consuming work with the ever-present specter of disaster to ships, as it was in 1950 and in 1990. Doctrine available to the Commander has notable shortcomings. The *U.S. Naval Mine Warfare Plan* acknowledges the "critical shortcoming" of operational pauses incurred by the slow reaction speed of dedicated mine countermeasures forces, but attempts to ameliorate this by assuming forward-based assets will be in theater and able to conduct preemptive countermining during periods of rising tensions.[17] Of course, the realities of operations in the long war, where action is swift and possible outside of traditional operating areas, render these assumptions tenuous at best. At least the *British Maritime Doctrine* is more self-honest, advising the Commander "The most effective mine countermeasures is to avoid mined areas."[18]

Cruise Missiles

On 21 October 1967 during the height of the Arab-Israeli War three SS-N-2 *Styx* missiles were launched from small and fast Egyptian missile boats, sinking the Israeli destroyer EILAT off Port Said, Egypt.[19] The modern anti-ship cruise missile had arrived, and history would see its deadly effectiveness evolve. During the 1982 Falklands war, *Exocet* cruise missiles air launched from Argentine Super Etendard jets took a shocking toll on the Royal Navy, sinking the air-defense destroyer HMS SHEFFIELD, the transport ship ATLANTIC CONVEYOR, and crippling the guided missile

destroyer HMS GLAMORGAN.[20] Finally, in 1987 two more air launched *Exocet*s fired from an Iraqi fighter devastated and nearly sank USS STARK while on patrol in the Persian Gulf. The frigate was so completely taken by surprise that she neither took evasive action nor fired back. These historical examples clearly demonstrate the vulnerability of naval surface forces to the quick and deadly cruise missile, which evolving technology has only exacerbated.

Figure 3 HMS SHEFFIELD burns after an Exocet hit

There is considerable diversity within the anti-ship cruise missile (ASCM) family. They can be launched from ship, shore, aircraft, or submarine. They can be propelled by engine or rocket at either sonic or subsonic speed. They have varying ranges and can fly a number of profiles from high altitude to sea skimming. Consistency does exist though, in the fact that they all carry potent warheads and are produced and exported all over the world, including to such potential adversaries as Iran, China, and North Korea.[21]

The Iranian navy operates several frigates and missile craft armed with the Chinese-made C-802 ASCM, a copy of the *Exocet* with a range of 120 kilometers.[22] Iran also has CSSC-3 *Seersucker* ASCM's organized into

coastal defense batteries covering the Straights of Hormuz, granting the ability to threaten traffic passing through that chokepoint. North Korea also has *Seersucker* batteries covering the coastal approaches to all major ports and naval bases, and operates missile craft equipped with older *Styx* ASCM.[23]

The Chinese inventory is even more formidable, as their military has invested heavily in ASCM technologies. In addition to the capabilities shared by Iran and North Korea, the Chinese possess air launched ASCM's such as the C-601, C-611, and the C-801L. Submarines such as the *Han* class SSN and the *Song* class SSK can fire a variant of the C-802. Most significantly, the Chinese have purchased two Russian *Sovremenny* class destroyers along with the fearsome SS-N-22 *Sunburn.* The SS-N-22 is an example of technology that the former Soviet Union was once reluctant to export, but which the now cash-strapped Russians have selectively sold. The missile carries a 300-kilogram armor-piercing warhead at speeds of Mach 2+, skimming only meters above the sea surface. Upon nearing the target, it may employ a series of terminal maneuvers including pop-up and weave, which make it extremely difficult to intercept. Indeed, the missile designers have admitted that the missile was specifically

Figure 4 Chinese Destroyer HANGZHOU launching SS-N-22 *Sunburn* ASCM

developed to defeat the latest naval combat systems, including the U.S. Navy's Aegis.[24]

Cruise missiles possess a number of other advantages aside from lethality, which makes them highly desirable to potential aggressors. They have a relatively small size that affords mobility and stealthy operation. For example, during Operation IRAQI FREEDOM an Iraqi missile battery was able to evade detection by British Royal Marines and fire several S*eersuckers* into Kuwait.[25] Cruise missiles can also be exported and purchased at reasonable cost, with one estimate projecting a developing nation acquiring 100 missiles for $50 million.[26] Lastly, the lower flight profile of most ASCM's improves their resistance to air defenses, their longer range gives area denial efforts added reach, and the advent of affordable GPS guidance vastly improves accuracy.

Once again, counter-ASCM doctrine available to the Joint Operational Commander is lacking. Though the Navy has recognized for decades the severe threat posed by ASCM's, doctrine was based on envisioned open-ocean engagements of massed Soviet air-launched missile barrages and is now mostly obsolete. Cruise missile doctrine for naval surface forces comprises three main efforts: First, avoid entering within range of ASCM threats. Second, prevent the enemy from gaining accurate targeting information against friendly ships. Third, employ a layered defensive scheme to engage missile threats beyond the horizon, relying on point-

defense systems to engage the few missiles that might manage to penetrate.[27]

Now contrast the aforementioned doctrine with this credible scenario of ASCM use by either a rogue nation or terrorist organization:

> A commercial surface vessel, covertly equipped to launch cruise missiles, would be a plausible alternative for a forward-based launch platform. This method would provide a large and potentially inconspicuous platform to launch a cruise missile while providing at least some cover for launch deniability.[28]

In such a situation as might be found in the littoral, naval surface forces would be at a marked disadvantage. The smaller area of the littoral would certainly place all vessels within threat range, and the enemy has the capability to collect targeting data from any number of "innocent" fishing or merchant ships in proximity to the Joint Force. And confronted by multi-axis, close range surprise attacks, the otherwise capable naval surface force point defenses would be overwhelmed. As it stands now, the Joint Force in the littoral is highly vulnerable to the cruise missile threat.

Diesel Electric Submarines

The 1982 Falklands war provides another appropriate historical example. Because of the broad and shallow continental shelf of Argentina, it may be considered hydrographically littoral.[29] In this environment, a single Argentine Type-209 diesel electric submarine, *San Luis*, faced ten Royal Navy warships with helicopters, plus additional air ASW assets from the nearby British carriers.[30] *San Luis* targeted and attacked these ships

throughout the war, though without success due to torpedo and fire control malfunctions. Meanwhile, the Royal Navy expended over 200 anti-submarine weapons on over 300 sonar contacts, without sinking the *San Luis*.[31]

From this experience, several lessons can be drawn, applicable to naval surface forces operating against diesel electric submarines in the littoral. First, anti-submarine defense is an absolute necessity when surface forces operate in a constrained area. Next, the Royal Navy underestimated the difficulty of detecting and defeating a diesel electric submarine in shallow water, nearly expending their entire inventory of ASW weapons. Finally, within the littoral submarines are capable of controlling the battlespace and sinking ships at will.[32]

As with mines and cruise missiles, diesel electric submarines have proliferated as an anti-access weapon of choice. Lacking a nuclear reactor for propulsion, they are smaller and noticeably easier to operate. Their relative lack of endurance is hardly a drawback when used close to shore. They are able to run imperceptibly quiet on electric motors while submerged, avoiding detection awaiting the opportunity to strike with the latest advanced torpedoes or laying mines. Representative of the export market is the Russian-made *Kilo* submarine, which has found its way into the service of China, Iran, and Algeria, among others. The *Kilo* can dive to 300 meters and travel 17 knots while submerged. It possesses advanced quieting features and can carry up to 18 anti-ship torpedoes or 24 mines.

Additionally, the *Kilo* can be configured to launch anti-ship cruise missiles.[33]

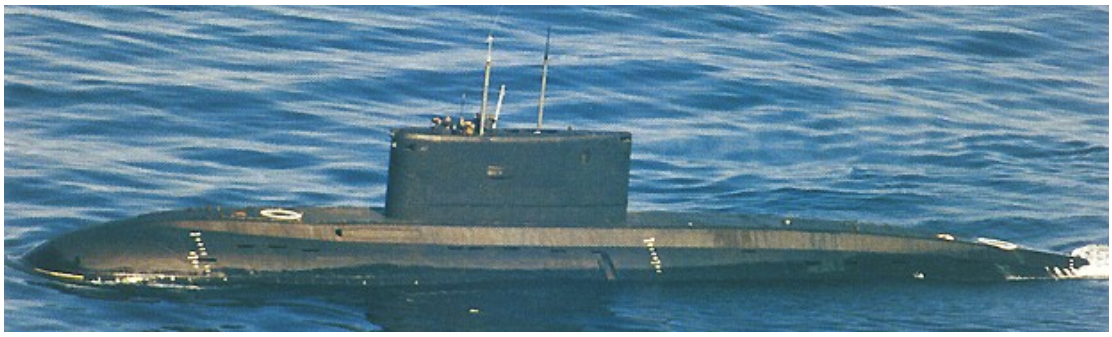

Figure 5 An export model *Kilo* running on the surface

The Joint Operational Commander must grapple with a number of doctrinal issues when faced with diesel electric submarines in the littoral. Similar to cruise missiles, anti-submarine doctrine was developed and optimized for open-ocean scenarios. Expanding zones of defense surround high-value units and focus on sinking the submarine before it can close to weapons range.[34] The constrained littoral sea space works against this construct. Additionally, compounding the inherent stealth of a diesel electric submarine, it is quite difficult to classify underwater contacts in shallow water. Sonar degradation, high false contact rates, and range limitations of acoustic equipment all serve to ensure that a persistent submarine can close to attack range a naval surface force.[35] Recognizing the vast potential for risk, doctrine places great emphasis on neutralization of submarine infrastructure, communications, and support, as well as the best intelligence regarding submarine disposition.[36] But once again this represents an ideal case, in lieu of which the Operational Commander is left

with the time consuming process of submarine prosecution by dedicated platforms, all while entertaining great risk to vulnerable high-value surface vessels such as transports and troopships.

Discussion

The ugly nature of the anti-access threat and doctrinal inconsistencies with the expectations of national level vision presents the Operational Commander with a time vs. risk relationship. As the Commander allots more time to allow dedicated naval forces to counter mines, cruise missiles, and submarines, the less risk of loss the Joint Force will face. However, lack of swift action runs counter to Operational principles and in the long war makes it likely the Joint Force can be neutralized by the overtaking of events. Equally, lessening the time allowed for area clearance of anti-access threats increases force risk to the point where is it certain naval surface forces will be damaged or sunk. The Commander must continually assess how much risk of loss is tolerable. Considering the aforementioned target selection ability of the three major anti-access threats, the loss of a high-value transport or troopship as opposed to a mine hunter or frigate is quite likely. Considering the amount of personnel and equipment carried by a modern transport, the loss of even one would be catastrophic to the Joint Force power projection capability.

There are certain viable counter-arguments. One is that the global striking capability of U.S. and Coalition forces affords an unprecedented

opportunity and ability to conduct operational fires to shape the littoral battlespace. Doctrine acknowledges that the preferred method of dealing with mines, cruise missiles, and submarines is by striking them before they can be employed. Whereas in the past preemptive strikes were rarely authorized, under the new national vision the path of action may demand preemptive strikes.

At issue with this notion is that fact that it is still an idealized best-case scenario. Granted, laying mines in international waters or chokepoints is an act of war and a clear case for preemptive strike, but what if mines are laid within territorial waters? Also, is intelligence robust enough to reasonably detect mines laid from fishing vessels under cover of darkness, as in the Gulf War, or from diesel electric submarines? Furthermore, sinking submarines pierside or striking ASCM sites requires precise fires in country. It cannot be reasonably asserted that a pre-hostilities strike will always be authorized, nor that the crucial aspect of timing will be good enough to catch these threats before they deploy upon commencement of hostilities. There are far too many uncertainties surrounding operational fires to avoid taking a hard look at anti-access doctrine.

Another counter-argument seeks a realistic estimate of enemy capabilities. While the booming export market may proliferate these threats into the hands of rogue nations and even terrorist organizations, it takes considerable time and experience to develop the tactics, techniques, and procedures necessary for effective use. Adding to this, U.S. and Coalition

forces can employ methods of overwhelming enemy command and control architecture to the point of ineffectiveness, using decoys and other means.[37]

This argument is legitimate and does accurately reflect a potent U.S. and Coalition ability. However, to appropriate an old saw: the enemy only has to get it right once, to potentially cripple an entire major operation. Also, history has shown in the case of the *San Luis* and the Iraqi *Seersucker* battery, that these forces are quite capable of resilient action in lieu of any effective command and control. Finally, this argument does not take into account the issue of sea mines. Once laid in a defensive field, no tactics nor command and control is necessary for highly effective operation.

Recommendations

This paper opens with a clear statement of recognition, at many levels, of the anti-access potential for denial of areas crucial to U.S. and Coalition goals. In fact, this recognition is not new. The 1992 white paper "…From the Sea" placed emphasis on the littorals as the new, post Cold-War environment of focus.[38] But despite the multitude of intellectual thought and the promise of new brown water wonder-weapons, such as the Littoral Combat Ship and network-centric riverine forces (endorsed in the latest 2006 Quadrennial Defense Review), the Defense establishment and the Navy in particular is still reluctant to take a hard look at lessons of the past and face the anti-access challenge.

Case in point, the Navy has decided for reasons of efficiency to retire the entire *Osprey*-class of coastal minehunters, after an average of only 10 years of service.[39] This cost-savings move drastically slashes the Navy's inventory of dedicated mine clearance platforms, well before any of the promised organic mine clearance assets have reached the fleet. This further increases the chances that the Joint Operational Commander will be without dedicated mine hunters while forward in theater. The mine hunter retirement accompanies the consolidation of Mine Warfare Command with a new Fleet Anti-Submarine Warfare Command, a move widely seen as ill conceived.[40] This is because it will place mine warfare in a losing competition for resources with ASW programs, as well as further compromise the dwindling core of mine warfare specialists. An official study of naval aspects of the Korean War stated "There was one residual result of the mine war in Korea. It was to make mine warfare a more dependable career specialty in the United States Navy."[41] Sadly, this appears to be a case of lessons needing to be re-learned.

What do these developments portend for the future? Compromising the Navy's mine hunting talent base poses grave danger for naval surface forces. Similarly, the skills needed to counter cruise missiles and submarines in the littorals will be continue to be sorely lacking if doctrine persists in reflecting the Cold War archetype. The advent of organic mine clearance capability or Littoral Combat Ships will be of little avail to a naval surface force whose war fighting skills against littoral anti-access threats

has deteriorated. This diminished skill set will result in a significant increase of unit losses when confronted with a robust area denial strategy. As a result, current notions for how much force is necessary to accomplish missions in the littoral need revision. The Joint Operational Commander will require a sizable increase in naval surface forces available, units capable of conducting dedicated mine hunting, ASCM defense, and ASW in concert with friendly airborne and subsurface forces. Only then would the Commander be able to provide adequate protection for power projection assets in the face of heightened risk to surface combatants.

This paper has shown the depth and breadth of the anti-access challenge posed to Operational Commanders by sea mines, cruise missiles, and diesel electric submarines. History teaches, and recent developments affirm, the need for honest appreciation of these threats at all levels of command. It is likely that the national vision for fighting the long war, emphasizing an aggressive offensive strategy of swift decisive action, will remain consistent. It necessarily follows then, that operational doctrine for naval surface forces must continue to evolve away from its Cold War blue water legacy, taking into account hard-fought gained experience and maturing littoral capabilities. Since naval surface forces will be relied upon to provide and exploit access for the Joint Force, operational doctrine must synthesize anti-access threats and more accurately reflect the Navy's new prime mission: sea control of the littoral. The resultant sound doctrine for

the long war will prove to be the most valuable asset available to the twenty-first century Joint Operational Commander.

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